

*Appendix 3-2*  
*Pumping Capacity Calculation*  
*to cope with 50-yr flood*  
*Espana-UST Area*

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping	Storage Pipe
						m <sup>3</sup>	446,000
25-9-2009 09:00:00	0.0	0.0	0.0	0.0		445,123	
25-9-2009 09:10:00	0.0	0.0	0.0	0.0	0		
25-9-2009 09:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 09:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 09:40:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 09:49:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:09:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:39:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 10:50:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:10:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:19:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:40:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 11:49:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:10:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:19:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:40:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 12:49:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:09:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:39:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 13:50:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:09:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:39:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 14:50:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:09:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:39:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 15:50:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:09:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:20:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:30:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:39:59	0.0	0.0	0.0	0.0	0	0	
25-9-2009 16:50:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 17:00:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 17:10:00	0.0	0.0	0.0	0.0	0	0	
25-9-2009 17:19:59	0.0	0.0	0.0	0.0	0	0	

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping	Storage Pipe
					m <sup>3</sup>	m <sup>3</sup>	446,000
25-9-2009 17:30:00	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:40:00	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:49:59	0.0	0.0	0.0	0.0	0		0
25-9-2009 18:00:00	0.0	0.0	0.0	0.0	0		0
25-9-2009 18:10:00	0.0	0.0	0.0	0.1	18		18
25-9-2009 18:19:59	0.1	0.1	0.1	0.3	96		114
25-9-2009 18:30:00	0.1	0.1	0.2	0.4	197		311
25-9-2009 18:40:00	0.1	0.1	0.2	0.5	259		569
25-9-2009 18:49:59	0.1	0.1	0.2	0.5	286		856
25-9-2009 19:00:00	0.1	0.1	0.2	0.5	299		1,154
25-9-2009 19:10:00	0.2	0.2	0.3	0.7	364		1,519
25-9-2009 19:19:59	0.4	0.4	0.6	1.4	626		2,145
25-9-2009 19:30:00	0.5	0.5	0.9	1.8	966		3,111
25-9-2009 19:40:00	0.5	0.5	1.0	2.1	1,172		4,283
25-9-2009 19:49:59	0.6	0.5	1.0	2.2	1,265		5,548
25-9-2009 20:00:00	0.6	0.6	1.1	2.2	1,305		6,853
25-9-2009 20:10:00	0.5	0.5	1.0	2.0	1,265		8,118
25-9-2009 20:19:59	0.4	0.3	0.7	1.4	1,016		9,134
25-9-2009 20:30:00	0.2	0.2	0.5	0.9	679		9,813
25-9-2009 20:40:00	0.2	0.2	0.3	0.7	475		10,288
25-9-2009 20:49:59	0.2	0.1	0.3	0.6	383		10,671
25-9-2009 21:00:00	0.2	0.1	0.3	0.6	343		11,015
25-9-2009 21:10:00	0.3	0.3	0.5	1.1	504		11,519
25-9-2009 21:19:59	0.8	0.8	1.4	3.1	1,272		12,790
25-9-2009 21:30:00	1.2	1.2	2.1	4.5	2,288		15,078
25-9-2009 21:40:00	1.4	1.3	2.5	5.2	2,903		17,981
25-9-2009 21:49:59	1.4	1.4	2.6	5.4	3,181		21,162
25-9-2009 22:00:00	1.5	1.4	2.7	5.6	3,302		24,464
25-9-2009 22:10:00	1.5	1.4	2.7	5.7	3,374		27,838
25-9-2009 22:19:59	1.6	1.5	2.8	5.9	3,476		31,314
25-9-2009 22:30:00	1.6	1.5	2.9	6.1	3,590		34,904
25-9-2009 22:40:00	1.6	1.5	2.9	6.1	3,657		38,561
25-9-2009 22:49:59	1.7	1.5	3.0	6.2	3,689		42,250
25-9-2009 23:00:00	1.7	1.5	3.0	6.2	3,702		45,952
25-9-2009 23:10:00	1.6	1.5	2.9	6.0	3,666		49,617
25-9-2009 23:19:59	1.5	1.4	2.7	5.6	3,488		53,105
25-9-2009 23:30:00	1.4	1.3	2.5	5.3	3,250		56,355
25-9-2009 23:40:00	1.4	1.3	2.5	5.1	3,106		59,461
25-9-2009 23:49:59	1.4	1.3	2.4	5.0	3,043		62,504
26-9-2009 00:00:00	1.3	1.3	2.4	5.0	3,016		65,520
26-9-2009 00:10:00	1.3	1.2	2.3	4.7	2,925		68,445
26-9-2009 00:19:59	1.0	0.9	1.9	3.9	2,582		71,027
26-9-2009 00:30:00	0.9	0.8	1.6	3.3	2,137		73,163
26-9-2009 00:40:00	0.8	0.7	1.4	3.0	1,869		75,032
26-9-2009 00:49:59	0.8	0.7	1.4	2.9	1,749		76,780
26-9-2009 01:00:00	0.8	0.7	1.3	2.8	1,695		78,475
26-9-2009 01:09:59	1.2	1.1	2.0	4.2	2,100		80,575
26-9-2009 01:20:00	2.4	2.4	4.1	9.0	3,953		84,527
26-9-2009 01:30:00	3.3	3.3	5.8	12.3	6,395		90,923
26-9-2009 01:39:59	3.7	3.6	6.6	13.9	7,872		98,795
26-9-2009 01:50:00	3.9	3.7	7.0	14.6	8,539		107,334

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping m <sup>3</sup>	Storage Pipe 446,000
	26-9-2009 02:00:00	4.0	3.8	7.1	14.9	8,831	
26-9-2009 02:09:59	3.8	3.6	6.8	14.2	8,712		124,877
26-9-2009 02:20:00	3.1	2.8	5.6	11.4	7,686		132,562
26-9-2009 02:30:00	2.6	2.3	4.6	9.5	6,285		138,847
26-9-2009 02:39:59	2.3	2.1	4.2	8.6	5,435		144,282
26-9-2009 02:50:00	2.2	2.0	4.0	8.2	5,052		149,333
26-9-2009 03:00:00	2.2	2.0	3.9	8.1	4,885		154,218
26-9-2009 03:09:59	2.2	2.0	3.8	8.0	4,809		159,027
26-9-2009 03:20:00	2.1	2.0	3.8	7.9	4,774		163,801
26-9-2009 03:30:00	2.1	2.0	3.8	7.9	4,758		168,559
26-9-2009 03:39:59	2.1	2.0	3.8	7.9	4,751		173,310
26-9-2009 03:50:00	2.1	2.0	3.8	7.9	4,747		178,057
26-9-2009 04:00:00	2.1	2.0	3.8	7.9	4,745		182,801
26-9-2009 04:09:59	2.2	2.1	4.0	8.3	4,863		187,665
26-9-2009 04:20:00	2.6	2.5	4.6	9.6	5,381		193,046
26-9-2009 04:30:00	2.8	2.7	5.0	10.6	6,061		199,107
26-9-2009 04:39:59	2.9	2.8	5.3	11.0	6,472		205,579
26-9-2009 04:50:00	3.0	2.8	5.4	11.2	6,657		212,236
26-9-2009 05:00:00	3.0	2.8	5.4	11.3	6,738		218,974
26-9-2009 05:09:59	2.8	2.6	5.1	10.6	6,554		225,528
26-9-2009 05:20:00	2.2	2.0	4.0	8.1	5,614		231,142
26-9-2009 05:30:00	1.7	1.5	3.2	6.4	4,364		235,506
26-9-2009 05:39:59	1.5	1.3	2.7	5.6	3,607		239,113
26-9-2009 05:50:00	1.4	1.3	2.6	5.3	3,265		242,379
26-9-2009 06:00:00	1.4	1.3	2.5	5.1	3,116		245,495
26-9-2009 06:09:59	1.2	1.1	2.2	4.6	2,917		248,411
26-9-2009 06:20:00	0.8	0.7	1.6	3.1	2,317		250,728
26-9-2009 06:30:00	0.6	0.5	1.0	2.1	1,556		252,284
26-9-2009 06:39:59	0.4	0.4	0.8	1.6	1,097		253,381
26-9-2009 06:50:00	0.4	0.3	0.7	1.4	889		254,270
26-9-2009 07:00:00	0.4	0.3	0.6	1.3	797		255,067
26-9-2009 07:09:59	0.3	0.3	0.6	1.2	757		255,824
26-9-2009 07:20:00	0.3	0.3	0.6	1.2	739		256,563
26-9-2009 07:30:00	0.3	0.3	0.6	1.2	730		257,292
26-9-2009 07:39:59	0.3	0.3	0.6	1.2	726		258,018
26-9-2009 07:50:00	0.3	0.3	0.6	1.2	724		258,743
26-9-2009 08:00:00	0.3	0.3	0.6	1.2	723		259,466
26-9-2009 08:09:59	0.3	0.3	0.5	1.1	699		260,165
26-9-2009 08:20:00	0.2	0.2	0.4	0.9	595		260,760
26-9-2009 08:30:00	0.2	0.2	0.3	0.7	459		261,219
26-9-2009 08:39:59	0.2	0.1	0.3	0.6	376		261,595
26-9-2009 08:50:00	0.1	0.1	0.3	0.5	339		261,934
26-9-2009 09:00:00	0.1	0.1	0.3	0.5	322		262,256
26-9-2009 09:09:59	0.5	0.4	0.8	1.7	668		262,924
26-9-2009 09:20:00	1.5	1.5	2.6	5.6	2,192		265,115
26-9-2009 09:30:00	2.2	2.2	3.9	8.4	4,196		269,311
26-9-2009 09:39:59	2.6	2.5	4.6	9.6	5,407		274,718
26-9-2009 09:50:00	2.7	2.6	4.9	10.2	5,953		280,671
26-9-2009 10:00:00	2.8	2.6	5.0	10.4	6,193		286,864
26-9-2009 10:09:59	3.9	3.6	6.7	14.2	7,381		294,245
26-9-2009 10:20:00	7.1	7.0	12.2	26.2	12,115		306,361

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping	Storage Pipe
					m <sup>3</sup>	446,000	
26-9-2009 10:30:00	9.2	9.2	16.4	34.7	18,292	19,560	305,092
26-9-2009 10:39:59	10.3	10.0	18.4	38.7	22,021	19,560	307,554
26-9-2009 10:50:00	10.8	10.3	19.3	40.4	23,704	19,560	311,698
26-9-2009 11:00:00	11.0	10.4	19.7	41.1	24,442	19,560	316,580
26-9-2009 11:09:59	10.8	10.2	19.5	40.5	24,495	19,560	321,514
26-9-2009 11:20:00	10.1	9.3	18.2	37.6	23,429	19,560	325,384
26-9-2009 11:30:00	9.5	8.8	17.1	35.4	21,902	19,560	327,726
26-9-2009 11:39:59	9.3	8.6	16.6	34.5	20,970	19,560	329,136
26-9-2009 11:50:00	9.2	8.5	16.4	34.0	20,551	19,560	330,127
26-9-2009 12:00:00	9.1	8.4	16.3	33.9	20,368	19,560	330,935
26-9-2009 12:09:59	9.2	8.5	16.4	34.2	20,404	19,560	331,779
26-9-2009 12:20:00	9.5	8.9	17.0	35.4	20,883	19,560	333,102
26-9-2009 12:30:00	9.8	9.1	17.5	36.4	21,545	19,560	335,087
26-9-2009 12:39:59	9.9	9.2	17.7	36.8	21,948	19,560	337,475
26-9-2009 12:50:00	9.9	9.3	17.8	37.0	22,130	19,560	340,045
26-9-2009 13:00:00	10.0	9.3	17.8	37.1	22,209	19,560	342,694
26-9-2009 13:09:59	10.4	9.7	18.5	38.5	22,681	19,560	345,815
26-9-2009 13:20:00	11.7	11.0	20.7	43.4	24,586	19,560	350,841
26-9-2009 13:30:00	12.5	11.9	22.4	46.8	27,076	19,560	358,357
26-9-2009 13:39:59	13.0	12.2	23.2	48.4	28,578	19,560	367,375
26-9-2009 13:50:00	13.2	12.4	23.6	49.1	29,257	19,560	377,073
26-9-2009 14:00:00	13.3	12.4	23.8	49.4	29,555	19,560	387,068
26-9-2009 14:09:59	13.1	12.2	23.5	48.9	29,493	19,560	397,000
26-9-2009 14:20:00	12.6	11.6	22.6	46.8	28,700	19,560	406,140
26-9-2009 14:30:00	12.2	11.2	21.8	45.2	27,605	19,560	414,186
26-9-2009 14:39:59	12.0	11.1	21.5	44.6	26,940	19,560	421,566
26-9-2009 14:50:00	11.9	11.0	21.3	44.3	26,642	19,560	428,648
26-9-2009 15:00:00	11.9	11.0	21.2	44.1	26,512	19,560	435,600
26-9-2009 15:09:59	11.2	10.4	20.2	41.8	25,784	19,560	441,825
26-9-2009 15:20:00	9.2	8.3	16.8	34.4	22,858	19,560	445,123
26-9-2009 15:30:00	7.9	7.0	14.2	29.1	19,038	19,560	444,601
26-9-2009 15:39:59	7.2	6.5	12.9	26.7	16,730	19,560	441,771
26-9-2009 15:50:00	6.9	6.3	12.4	25.6	15,689	19,560	437,900
26-9-2009 16:00:00	6.8	6.2	12.1	25.2	15,233	19,560	433,573
26-9-2009 16:09:59	6.4	5.9	11.4	23.6	14,639	19,560	428,652
26-9-2009 16:20:00	5.2	4.6	9.4	19.2	12,864	19,560	421,956
26-9-2009 16:30:00	4.4	3.9	7.9	16.1	10,610	19,560	413,006
26-9-2009 16:39:59	4.0	3.6	7.1	14.7	9,253	19,560	402,699
26-9-2009 16:50:00	3.8	3.5	6.8	14.1	8,640	19,560	391,779
26-9-2009 17:00:00	3.7	3.4	6.7	13.8	8,372	19,560	380,591
26-9-2009 17:10:00	3.7	3.4	6.5	13.5	8,209	19,560	369,240
26-9-2009 17:19:59	3.5	3.2	6.3	13.0	7,973	19,560	357,653
26-9-2009 17:30:00	3.4	3.1	6.1	12.7	7,709	19,560	345,801
26-9-2009 17:40:00	3.4	3.1	6.0	12.5	7,553	19,560	333,794
26-9-2009 17:49:59	3.3	3.1	6.0	12.4	7,482	19,560	321,717
26-9-2009 18:00:00	3.3	3.1	6.0	12.4	7,451	19,560	309,608
26-9-2009 18:10:00	3.2	3.0	5.7	11.9	7,282	19,560	297,330
26-9-2009 18:19:59	2.7	2.5	4.9	10.1	6,603	19,560	284,373
26-9-2009 18:30:00	2.4	2.2	4.3	8.9	5,716	19,560	270,529
26-9-2009 18:40:00	2.3	2.0	4.0	8.4	5,180	19,560	256,149
26-9-2009 18:49:59	2.2	2.0	3.9	8.1	4,939	19,560	241,528

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping	Storage Pipe
					m <sup>3</sup>	m <sup>3</sup>	446,000
26-9-2009 19:00:00	2.2	2.0	3.9	8.0	4,833	19,560	226,801
26-9-2009 19:10:00	2.1	1.9	3.7	7.7	4,707	19,560	211,948
26-9-2009 19:19:59	1.8	1.7	3.3	6.8	4,349	19,560	196,737
26-9-2009 19:30:00	1.7	1.5	3.0	6.2	3,896	19,560	181,073
26-9-2009 19:40:00	1.6	1.5	2.8	5.9	3,625	19,560	165,138
26-9-2009 19:49:59	1.6	1.4	2.8	5.8	3,502	19,560	149,080
26-9-2009 20:00:00	1.5	1.4	2.8	5.7	3,448	19,560	132,968
26-9-2009 20:10:00	1.4	1.3	2.5	5.1	3,244	19,560	116,652
26-9-2009 20:19:59	0.8	0.7	1.6	3.1	2,456	19,560	99,548
26-9-2009 20:30:00	0.5	0.3	0.9	1.7	1,432	19,560	81,420
26-9-2009 20:40:00	0.3	0.2	0.5	1.0	814	19,560	62,674
26-9-2009 20:49:59	0.2	0.2	0.4	0.8	535	19,560	43,649
26-9-2009 21:00:00	0.2	0.1	0.3	0.6	412	19,560	24,501
26-9-2009 21:10:00	0.3	0.3	0.5	1.0	495	19,560	5,436
26-9-2009 21:19:59	0.7	0.7	1.2	2.5	1,065	19,560	-13,059
26-9-2009 21:30:00	1.0	1.0	1.7	3.6	1,835	19,560	-30,784
26-9-2009 21:40:00	1.1	1.1	1.9	4.1	2,301	19,560	-48,043
26-9-2009 21:49:59	1.1	1.1	2.1	4.3	2,512	19,560	-65,092
26-9-2009 22:00:00	1.2	1.1	2.1	4.4	2,605	19,560	-82,047
26-9-2009 22:10:00	1.2	1.1	2.1	4.3	2,611	19,560	-98,997
26-9-2009 22:19:59	1.1	1.0	1.9	3.9	2,474	19,560	-116,082
26-9-2009 22:30:00	1.0	0.9	1.8	3.7	2,279	19,560	-133,364
26-9-2009 22:40:00	1.0	0.9	1.7	3.5	2,159	19,560	-150,765
26-9-2009 22:49:59	0.9	0.9	1.7	3.5	2,105	19,560	-168,219
26-9-2009 23:00:00	0.9	0.9	1.7	3.5	2,082	19,560	-185,697
26-9-2009 23:10:00	0.8	0.8	1.5	3.0	1,953	19,560	-203,304
26-9-2009 23:19:59	0.5	0.4	0.9	1.7	1,429	19,560	-221,435
26-9-2009 23:30:00	0.2	0.1	0.4	0.8	747	19,560	-240,248
26-9-2009 23:40:00	0.1	0.1	0.2	0.3	335	19,560	-259,473
26-9-2009 23:49:59	0.1	0.0	0.1	0.2	150	19,560	-278,883
27-9-2009 00:00:00	0.0	0.0	0.0	0.1	68	19,560	-298,375
27-9-2009 00:10:00	0.0	0.0	0.0	0.1	49	19,560	-317,885
27-9-2009 00:19:59	0.1	0.1	0.1	0.3	110	19,560	-337,335
27-9-2009 00:30:00	0.1	0.1	0.2	0.4	204	19,560	-356,691
27-9-2009 00:40:00	0.1	0.1	0.2	0.5	262	19,560	-375,988
27-9-2009 00:49:59	0.1	0.1	0.2	0.5	288	19,560	-395,260
27-9-2009 01:00:00	0.1	0.1	0.2	0.5	299	19,560	-414,520
27-9-2009 01:10:00	0.1	0.1	0.2	0.5	305	19,560	-433,775
27-9-2009 01:19:59	0.1	0.1	0.2	0.5	308	19,560	-453,028
27-9-2009 01:30:00	0.1	0.1	0.2	0.5	309	19,560	-472,279
27-9-2009 01:40:00	0.1	0.1	0.2	0.5	309	19,560	-491,530
27-9-2009 01:49:59	0.1	0.1	0.2	0.5	309	19,560	-510,781
27-9-2009 02:00:00	0.1	0.1	0.2	0.5	309	19,560	-530,032
27-9-2009 02:10:00	0.1	0.1	0.2	0.5	291	19,560	-549,300
27-9-2009 02:19:59	0.1	0.1	0.1	0.3	214	19,560	-568,647
27-9-2009 02:30:00	0.0	0.0	0.1	0.1	112	19,560	-588,094
27-9-2009 02:40:00	0.0	0.0	0.0	0.1	51	19,560	-607,603
27-9-2009 02:49:59	0.0	0.0	0.0	0.0	23	19,560	-627,140
27-9-2009 03:00:00	0.0	0.0	0.0	0.0	10	19,560	-646,689
27-9-2009 03:10:00	0.0	0.0	0.0	0.0	4	19,560	-666,245
27-9-2009 03:19:59	0.0	0.0	0.0	0.0	2	19,560	-685,803

**Computation of Pumping Capacity to cope with 50-yr flood (España-UST Area)**

時間	Inflow m <sup>3</sup> /s				Inflow m <sup>3</sup>	32.6 m <sup>3</sup> /s	
	Intake 1	Intake 2	Intake 3	Total		Pumping m <sup>3</sup>	Storage Pipe 446,000
	27-9-2009 03:30:00	0.0	0.0	0.0	0.0	1	19,560
27-9-2009 03:40:00	0.0	0.0	0.0	0.0	1	19,560	-724,921
27-9-2009 03:49:59	0.0	0.0	0.0	0.0	0	19,560	-744,480
27-9-2009 04:00:00	0.0	0.0	0.0	0.0	0	19,560	-764,040
27-9-2009 04:10:00	0.0	0.0	0.0	0.0	0	19,560	-783,600
27-9-2009 04:19:59	0.0	0.0	0.0	0.0	0	19,560	-803,160
27-9-2009 04:30:00	0.0	0.0	0.0	0.0	0	19,560	-822,720
27-9-2009 04:40:00	0.0	0.0	0.0	0.0	0	19,560	-842,280
27-9-2009 04:49:59	0.0	0.0	0.0	0.0	0	19,560	-861,840
27-9-2009 05:00:00	0.0	0.0	0.0	0.0	0	19,560	-881,400
27-9-2009 05:10:00	0.0	0.0	0.0	0.0	0	19,560	-900,960
27-9-2009 05:19:59	0.0	0.0	0.0	0.0	0	19,560	-920,520
27-9-2009 05:30:00	0.0	0.0	0.0	0.0	0	19,560	-940,080
27-9-2009 05:40:00	0.0	0.0	0.0	0.0	0	19,560	-959,640
27-9-2009 05:49:59	0.0	0.0	0.0	0.0	0	19,560	-979,200
27-9-2009 06:00:00	0.0	0.0	0.0	0.0	0	19,560	-998,760
27-9-2009 06:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,018,320
27-9-2009 06:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,037,880
27-9-2009 06:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,057,440
27-9-2009 06:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,077,000
27-9-2009 06:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,096,560
27-9-2009 07:00:00	0.0	0.0	0.0	0.0	0	19,560	-1,116,120
27-9-2009 07:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,135,680
27-9-2009 07:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,155,240
27-9-2009 07:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,174,800
27-9-2009 07:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,194,360
27-9-2009 07:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,213,920
27-9-2009 08:00:00	0.0	0.0	0.0	0.0	0	19,560	-1,233,480
27-9-2009 08:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,253,040
27-9-2009 08:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,272,600
27-9-2009 08:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,292,160
27-9-2009 08:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,311,720
27-9-2009 08:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,331,280
27-9-2009 09:00:00	0.0	0.0	0.0	0.0	0	19,560	-1,350,840
27-9-2009 09:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,370,400
27-9-2009 09:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,389,960
27-9-2009 09:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,409,520
27-9-2009 09:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,429,080
27-9-2009 09:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,448,640
27-9-2009 10:00:00	0.0	0.0	0.0	0.0	0	19,560	-1,468,200
27-9-2009 10:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,487,760
27-9-2009 10:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,507,320
27-9-2009 10:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,526,880
27-9-2009 10:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,546,440
27-9-2009 10:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,566,000
27-9-2009 11:00:00	0.0	0.0	0.0	0.0	0	19,560	-1,585,560
27-9-2009 11:10:00	0.0	0.0	0.0	0.0	0	19,560	-1,605,120
27-9-2009 11:19:59	0.0	0.0	0.0	0.0	0	19,560	-1,624,680
27-9-2009 11:30:00	0.0	0.0	0.0	0.0	0	19,560	-1,644,240
27-9-2009 11:40:00	0.0	0.0	0.0	0.0	0	19,560	-1,663,800
27-9-2009 11:49:59	0.0	0.0	0.0	0.0	0	19,560	-1,683,360

*Appendix 3-3*  
*Pumping Capacity Calculation*  
*to cope with 50-yr flood*  
*Buendia-Maricaban Area*



**Computation of Pumping Capacity to cope with 50-yr flood (Buendia-Maricaban Area)**

時間	Inflow m <sup>3</sup> /s					Inflow m <sup>3</sup>	44.7 m <sup>3</sup> /s	
	Intake1	Intake2	Intake3	Intake4	Total		Pumping m <sup>3</sup>	Storage Pipe 844,000
25-9-2009 09:00:00	0.0	0.0	0.0	0.0	0.0			843,836
25-9-2009 09:10:00	0.0	0.0	0.0	0.0	0.0	0		
25-9-2009 09:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 09:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 09:40:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 09:49:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:09:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:39:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 10:50:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:10:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:19:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:40:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 11:49:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:10:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:19:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:40:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 12:49:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:09:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:39:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 13:50:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:09:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:39:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 14:50:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:09:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:39:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 15:50:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:09:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:20:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:39:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 16:50:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:10:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:19:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:30:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 17:40:00	0.0	0.0	0.0	0.0	0.0	0		0

**Computation of Pumping Capacity to cope with 50-yr flood (Buendia-Maricaban Area)**

時間	Inflow m <sup>3</sup> /s					Inflow m <sup>3</sup>	44.7 m <sup>3</sup> /s	
	Intake1	Intake2	Intake3	Intake4	Total		Pumping m <sup>3</sup>	Storage Pipe 844,000
25-9-2009 17:49:59	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 18:00:00	0.0	0.0	0.0	0.0	0.0	0		0
25-9-2009 18:10:00	0.0	0.0	0.0	0.0	0.0	12		12
25-9-2009 18:19:59	0.1	0.0	0.0	0.0	0.2	68		80
25-9-2009 18:30:00	0.2	0.0	0.1	0.1	0.4	168		248
25-9-2009 18:40:00	0.2	0.1	0.1	0.2	0.5	271		519
25-9-2009 18:49:59	0.2	0.1	0.1	0.2	0.7	356		875
25-9-2009 19:00:00	0.2	0.1	0.1	0.2	0.7	413		1,288
25-9-2009 19:10:00	0.3	0.1	0.2	0.3	0.9	487		1,774
25-9-2009 19:19:59	0.6	0.2	0.2	0.4	1.4	694		2,468
25-9-2009 19:30:00	0.8	0.2	0.4	0.6	2.0	1,037		3,505
25-9-2009 19:40:00	1.0	0.3	0.5	0.8	2.6	1,392		4,898
25-9-2009 19:49:59	1.0	0.3	0.6	1.0	3.0	1,677		6,575
25-9-2009 20:00:00	1.1	0.4	0.7	1.1	3.2	1,867		8,442
25-9-2009 20:10:00	1.0	0.4	0.7	1.2	3.2	1,940		10,382
25-9-2009 20:19:59	0.8	0.3	0.6	1.1	2.8	1,822		12,204
25-9-2009 20:30:00	0.6	0.3	0.5	0.9	2.3	1,532		13,736
25-9-2009 20:40:00	0.4	0.2	0.4	0.7	1.8	1,209		14,945
25-9-2009 20:49:59	0.4	0.2	0.3	0.5	1.4	945		15,889
25-9-2009 21:00:00	0.3	0.1	0.3	0.4	1.2	766		16,656
25-9-2009 21:10:00	0.6	0.2	0.3	0.4	1.4	781		17,437
25-9-2009 21:19:59	1.4	0.3	0.4	0.7	2.8	1,279		18,716
25-9-2009 21:30:00	2.0	0.5	0.8	1.3	4.6	2,236		20,952
25-9-2009 21:40:00	2.4	0.7	1.1	2.0	6.2	3,256		24,207
25-9-2009 21:49:59	2.6	0.9	1.4	2.5	7.4	4,082		28,290
25-9-2009 22:00:00	2.7	0.9	1.6	2.8	8.1	4,635		32,925
25-9-2009 22:10:00	2.8	1.0	1.7	3.0	8.5	4,977		37,901
25-9-2009 22:19:59	3.0	1.0	1.8	3.1	8.9	5,231		43,132
25-9-2009 22:30:00	3.1	1.1	1.9	3.3	9.3	5,451		48,583
25-9-2009 22:40:00	3.1	1.1	1.9	3.4	9.5	5,628		54,210
25-9-2009 22:49:59	3.1	1.1	2.0	3.4	9.7	5,757		59,967
25-9-2009 23:00:00	3.2	1.1	2.0	3.5	9.8	5,841		65,809
25-9-2009 23:10:00	3.1	1.1	2.0	3.5	9.8	5,864		71,673
25-9-2009 23:19:59	2.9	1.1	2.0	3.4	9.5	5,763		77,436
25-9-2009 23:30:00	2.8	1.0	1.9	3.3	9.0	5,550		82,985
25-9-2009 23:40:00	2.7	1.0	1.8	3.2	8.7	5,318		88,303
25-9-2009 23:49:59	2.7	1.0	1.8	3.0	8.4	5,129		93,433
26-9-2009 00:00:00	2.6	0.9	1.7	3.0	8.3	5,001		98,434
26-9-2009 00:10:00	2.5	0.9	1.7	2.9	8.0	4,872		103,306
26-9-2009 00:19:59	2.1	0.8	1.6	2.7	7.3	4,584		107,889
26-9-2009 00:30:00	1.8	0.7	1.4	2.5	6.5	4,125		112,014
26-9-2009 00:40:00	1.7	0.6	1.2	2.2	5.7	3,656		115,670
26-9-2009 00:49:59	1.6	0.6	1.1	1.9	5.2	3,281		118,951
26-9-2009 01:00:00	1.5	0.6	1.0	1.8	4.9	3,031		121,982
26-9-2009 01:09:59	2.1	0.6	1.1	1.8	5.7	3,173		125,155
26-9-2009 01:20:00	4.1	1.0	1.5	2.5	9.1	4,431		129,586
26-9-2009 01:30:00	5.6	1.6	2.3	4.0	13.5	6,764		136,350
26-9-2009 01:39:59	6.5	2.1	3.2	5.6	17.3	9,233		145,584
26-9-2009 01:50:00	7.0	2.4	3.9	6.8	20.1	11,232		156,816
26-9-2009 02:00:00	7.3	2.5	4.4	7.6	21.8	12,570		169,385
26-9-2009 02:09:59	7.1	2.6	4.6	7.9	22.2	13,197		182,582
26-9-2009 02:20:00	6.1	2.4	4.5	7.8	20.8	12,889		195,471
26-9-2009 02:30:00	5.3	2.1	4.1	7.1	18.5	11,787		207,258

**Computation of Pumping Capacity to cope with 50-yr flood (Buendia-Maricaban Area)**

時間	Inflow m <sup>3</sup> /s					Inflow m <sup>3</sup>	44.7 m <sup>3</sup> /s	
	Intake1	Intake2	Intake3	Intake4	Total		Pumping m <sup>3</sup>	Storage Pipe 844,000
26-9-2009 02:39:59	4.8	1.8	3.6	6.2	16.5	10,504		217,762
26-9-2009 02:50:00	4.5	1.7	3.2	5.5	15.0	9,435		227,196
26-9-2009 03:00:00	4.4	1.6	3.0	5.1	14.1	8,715		235,911
26-9-2009 03:09:59	4.3	1.5	2.8	4.9	13.5	8,286		244,198
26-9-2009 03:20:00	4.2	1.5	2.8	4.8	13.2	8,029		252,227
26-9-2009 03:30:00	4.2	1.5	2.7	4.7	13.0	7,875		260,102
26-9-2009 03:39:59	4.1	1.5	2.7	4.6	12.9	7,781		267,882
26-9-2009 03:50:00	4.1	1.5	2.6	4.6	12.8	7,721		275,604
26-9-2009 04:00:00	4.1	1.5	2.6	4.6	12.8	7,684		283,288
26-9-2009 04:09:59	4.3	1.5	2.7	4.6	13.0	7,742		291,030
26-9-2009 04:20:00	4.8	1.6	2.8	4.8	14.0	8,102		299,131
26-9-2009 04:30:00	5.3	1.8	3.0	5.2	15.2	8,755		307,887
26-9-2009 04:39:59	5.5	1.9	3.3	5.6	16.3	9,446		317,333
26-9-2009 04:50:00	5.6	2.0	3.5	6.0	17.1	10,004		327,337
26-9-2009 05:00:00	5.7	2.0	3.6	6.2	17.5	10,379		337,716
26-9-2009 05:09:59	5.5	2.0	3.6	6.3	17.3	10,453		348,168
26-9-2009 05:20:00	4.5	1.8	3.4	6.0	15.7	9,894		358,062
26-9-2009 05:30:00	3.7	1.5	3.0	5.2	13.5	8,747		366,810
26-9-2009 05:39:59	3.3	1.3	2.6	4.4	11.5	7,511		374,320
26-9-2009 05:50:00	3.0	1.1	2.2	3.8	10.1	6,504		380,824
26-9-2009 06:00:00	2.8	1.0	2.0	3.4	9.3	5,830		386,654
26-9-2009 06:09:59	2.5	1.0	1.8	3.2	8.5	5,338		391,992
26-9-2009 06:20:00	1.9	0.8	1.6	2.8	7.1	4,685		396,677
26-9-2009 06:30:00	1.4	0.6	1.3	2.3	5.6	3,810		400,487
26-9-2009 06:39:59	1.1	0.5	1.0	1.7	4.3	2,955		403,442
26-9-2009 06:50:00	0.9	0.4	0.8	1.3	3.3	2,283		405,725
26-9-2009 07:00:00	0.8	0.3	0.6	1.1	2.8	1,837		407,562
26-9-2009 07:09:59	0.7	0.3	0.5	0.9	2.5	1,570		409,133
26-9-2009 07:20:00	0.7	0.3	0.5	0.8	2.2	1,409		410,542
26-9-2009 07:30:00	0.7	0.2	0.4	0.8	2.1	1,311		411,853
26-9-2009 07:39:59	0.7	0.2	0.4	0.7	2.0	1,251		413,104
26-9-2009 07:50:00	0.6	0.2	0.4	0.7	2.0	1,216		414,320
26-9-2009 08:00:00	0.6	0.2	0.4	0.7	2.0	1,195		415,515
26-9-2009 08:09:59	0.6	0.2	0.4	0.7	1.9	1,165		416,680
26-9-2009 08:20:00	0.5	0.2	0.4	0.6	1.7	1,082		417,763
26-9-2009 08:30:00	0.4	0.2	0.3	0.6	1.4	944		418,707
26-9-2009 08:39:59	0.3	0.1	0.3	0.5	1.2	802		419,509
26-9-2009 08:50:00	0.3	0.1	0.2	0.4	1.1	688		420,197
26-9-2009 09:00:00	0.3	0.1	0.2	0.4	1.0	613		420,810
26-9-2009 09:09:59	0.8	0.2	0.3	0.4	1.7	805		421,615
26-9-2009 09:20:00	2.4	0.5	0.6	1.0	4.6	1,883		423,498
26-9-2009 09:30:00	3.7	1.0	1.3	2.2	8.2	3,824		427,322
26-9-2009 09:39:59	4.4	1.4	2.1	3.6	11.4	5,864		433,186
26-9-2009 09:50:00	4.8	1.6	2.7	4.6	13.7	7,511		440,697
26-9-2009 10:00:00	5.1	1.7	3.0	5.2	15.0	8,613		449,310
26-9-2009 10:09:59	6.9	2.1	3.4	5.9	18.3	10,002		459,312
26-9-2009 10:20:00	12.0	3.1	4.6	8.0	27.7	13,787		473,099
26-9-2009 10:30:00	15.8	4.6	6.9	11.9	39.1	20,028		493,127
26-9-2009 10:39:59	18.1	5.8	9.2	16.0	49.1	26,463	26,820	492,770
26-9-2009 10:50:00	19.4	6.6	11.1	19.2	56.3	31,627	26,820	497,577
26-9-2009 11:00:00	20.3	7.0	12.2	21.1	60.6	35,074	26,820	505,831
26-9-2009 11:09:59	20.4	7.2	12.8	22.2	62.5	36,942	26,820	515,953
26-9-2009 11:20:00	19.4	7.1	12.9	22.4	61.8	37,301	26,820	526,434

**Computation of Pumping Capacity to cope with 50-yr flood (Buendia-Maricaban Area)**

時間	Inflow m <sup>3</sup> /s					Inflow m <sup>3</sup>	44.7	m <sup>3</sup> /s
	Intake1	Intake2	Intake3	Intake4	Total		Pumping m <sup>3</sup>	Storage Pipe 844,000
26-9-2009 11:30:00	18.6	6.8	12.6	21.8	59.8	36,494	26,820	536,107
26-9-2009 11:39:59	18.1	6.5	12.2	21.0	57.9	35,315	26,820	544,602
26-9-2009 11:50:00	17.9	6.4	11.8	20.4	56.4	34,274	26,820	552,056
26-9-2009 12:00:00	17.7	6.3	11.5	20.0	55.5	33,564	26,820	558,801
26-9-2009 12:09:59	17.8	6.3	11.4	19.8	55.3	33,226	26,820	565,207
26-9-2009 12:20:00	18.3	6.4	11.5	19.8	55.9	33,351	26,820	571,738
26-9-2009 12:30:00	18.7	6.5	11.6	20.1	57.0	33,865	26,820	578,783
26-9-2009 12:39:59	18.9	6.6	11.9	20.5	57.9	34,468	26,820	586,431
26-9-2009 12:50:00	19.0	6.7	12.0	20.8	58.6	34,967	26,820	594,578
26-9-2009 13:00:00	19.1	6.8	12.2	21.0	59.0	35,303	26,820	603,061
26-9-2009 13:09:59	19.8	6.9	12.3	21.3	60.3	35,798	26,820	612,039
26-9-2009 13:20:00	21.9	7.3	12.8	22.1	64.0	37,285	26,820	622,505
26-9-2009 13:30:00	23.4	7.9	13.7	23.6	68.6	39,778	26,820	635,463
26-9-2009 13:39:59	24.3	8.4	14.6	25.3	72.6	42,361	26,820	651,004
26-9-2009 13:50:00	24.9	8.7	15.4	26.6	75.5	44,436	26,820	668,620
26-9-2009 14:00:00	25.2	8.9	15.8	27.4	77.2	45,822	26,820	687,622
26-9-2009 14:09:59	25.1	8.9	16.0	27.8	77.8	46,515	26,820	707,316
26-9-2009 14:20:00	24.3	8.8	16.0	27.7	76.8	46,395	26,820	726,892
26-9-2009 14:30:00	23.7	8.6	15.7	27.2	75.2	45,603	26,820	745,675
26-9-2009 14:39:59	23.3	8.4	15.3	26.6	73.6	44,639	26,820	763,493
26-9-2009 14:50:00	23.1	8.3	15.0	26.0	72.5	43,825	26,820	780,498
26-9-2009 15:00:00	23.0	8.2	14.9	25.7	71.8	43,275	26,820	796,953
26-9-2009 15:09:59	21.9	8.0	14.6	25.3	69.9	42,497	26,820	812,630
26-9-2009 15:20:00	18.8	7.4	13.9	24.1	64.1	40,206	26,820	826,016
26-9-2009 15:30:00	16.4	6.5	12.5	21.7	57.1	36,373	26,820	835,570
26-9-2009 15:39:59	15.0	5.7	11.1	19.1	50.9	32,408	26,820	841,158
26-9-2009 15:50:00	14.2	5.2	9.9	17.2	46.5	29,223	26,820	843,560
26-9-2009 16:00:00	13.7	5.0	9.2	16.0	43.8	27,096	26,820	843,836
26-9-2009 16:09:59	12.8	4.7	8.7	15.1	41.4	25,564	26,820	842,580
26-9-2009 16:20:00	10.8	4.3	8.1	14.0	37.2	23,582	26,820	839,341
26-9-2009 16:30:00	9.3	3.7	7.2	12.4	32.6	20,963	26,820	833,484
26-9-2009 16:39:59	8.4	3.2	6.3	10.8	28.8	18,424	26,820	825,088
26-9-2009 16:50:00	7.9	2.9	5.6	9.6	26.0	16,430	26,820	814,698
26-9-2009 17:00:00	7.6	2.8	5.1	8.9	24.4	15,107	26,820	802,985
26-9-2009 17:10:00	7.3	2.7	4.9	8.4	23.3	14,286	26,820	790,450
26-9-2009 17:19:59	7.0	2.6	4.7	8.1	22.3	13,676	26,820	777,306
26-9-2009 17:30:00	6.8	2.5	4.5	7.8	21.5	13,153	26,820	763,639
26-9-2009 17:40:00	6.6	2.4	4.4	7.5	20.9	12,736	26,820	749,555
26-9-2009 17:49:59	6.6	2.4	4.3	7.4	20.5	12,434	26,820	735,169
26-9-2009 18:00:00	6.5	2.3	4.2	7.3	20.3	12,238	26,820	720,587
26-9-2009 18:10:00	6.2	2.3	4.1	7.1	19.8	12,015	26,820	705,782
26-9-2009 18:19:59	5.5	2.1	4.0	6.8	18.4	11,455	26,820	690,418
26-9-2009 18:30:00	4.9	1.9	3.6	6.3	16.8	10,549	26,820	674,146
26-9-2009 18:40:00	4.6	1.7	3.3	5.7	15.3	9,619	26,820	656,946
26-9-2009 18:49:59	4.4	1.6	3.0	5.2	14.3	8,876	26,820	639,002
26-9-2009 19:00:00	4.3	1.6	2.9	4.9	13.7	8,380	26,820	620,562
26-9-2009 19:10:00	4.1	1.5	2.7	4.8	13.1	8,032	26,820	601,774
26-9-2009 19:19:59	3.7	1.4	2.6	4.5	12.3	7,609	26,820	582,563
26-9-2009 19:30:00	3.4	1.3	2.4	4.2	11.3	7,069	26,820	562,811
26-9-2009 19:40:00	3.2	1.2	2.2	3.9	10.5	6,551	26,820	542,543
26-9-2009 19:49:59	3.1	1.1	2.1	3.6	10.0	6,148	26,820	521,870
26-9-2009 20:00:00	3.1	1.1	2.0	3.5	9.6	5,879	26,820	500,929
26-9-2009 20:10:00	2.7	1.0	1.9	3.3	9.0	5,597	26,820	479,707

**Computation of Pumping Capacity to cope with 50-yr flood (Buendia-Maricaban Area)**

時間	Inflow m <sup>3</sup> /s					Inflow m <sup>3</sup>	44.7	m <sup>3</sup> /s
	Intake1	Intake2	Intake3	Intake4	Total		Pumping m <sup>3</sup>	Storage Pipe 844,000
26-9-2009 20:19:59	1.9	0.9	1.7	3.0	7.4	4,939	26,820	457,825
26-9-2009 20:30:00	1.2	0.6	1.3	2.3	5.5	3,884	26,820	434,890
26-9-2009 20:40:00	0.9	0.4	0.9	1.6	3.8	2,806	26,820	410,876
26-9-2009 20:49:59	0.6	0.3	0.6	1.1	2.6	1,943	26,820	385,999
26-9-2009 21:00:00	0.5	0.2	0.4	0.8	1.9	1,367	26,820	360,546
26-9-2009 21:10:00	0.6	0.2	0.4	0.6	1.8	1,118	26,820	334,844
26-9-2009 21:19:59	1.2	0.3	0.4	0.7	2.7	1,342	26,820	309,367
26-9-2009 21:30:00	1.7	0.5	0.7	1.1	3.9	1,979	26,820	284,526
26-9-2009 21:40:00	1.9	0.6	0.9	1.6	5.1	2,702	26,820	260,408
26-9-2009 21:49:59	2.1	0.7	1.2	2.0	5.9	3,300	26,820	236,888
26-9-2009 22:00:00	2.2	0.7	1.3	2.2	6.4	3,703	26,820	213,771
26-9-2009 22:10:00	2.2	0.8	1.4	2.3	6.6	3,919	26,820	190,870
26-9-2009 22:19:59	2.0	0.8	1.4	2.4	6.5	3,950	26,820	168,000
26-9-2009 22:30:00	1.9	0.7	1.3	2.3	6.3	3,839	26,820	145,019
26-9-2009 22:40:00	1.9	0.7	1.3	2.2	6.0	3,683	26,820	121,882
26-9-2009 22:49:59	1.8	0.7	1.2	2.1	5.8	3,547	26,820	98,609
26-9-2009 23:00:00	1.8	0.6	1.2	2.1	5.7	3,456	26,820	75,244
26-9-2009 23:10:00	1.6	0.6	1.1	2.0	5.4	3,320	26,820	51,745
26-9-2009 23:19:59	1.1	0.5	1.0	1.8	4.3	2,913	26,820	27,838
26-9-2009 23:30:00	0.6	0.3	0.8	1.3	3.1	2,231	26,820	3,249
26-9-2009 23:40:00	0.4	0.2	0.5	0.9	2.0	1,524	26,820	-22,048
26-9-2009 23:49:59	0.2	0.1	0.3	0.5	1.2	955	26,820	-47,913
27-9-2009 00:00:00	0.2	0.1	0.2	0.3	0.7	575	26,820	-74,158
27-9-2009 00:10:00	0.1	0.1	0.1	0.2	0.5	360	26,820	-100,618
27-9-2009 00:19:59	0.2	0.1	0.1	0.1	0.5	279	26,820	-127,159
27-9-2009 00:30:00	0.2	0.1	0.1	0.2	0.5	296	26,820	-153,683
27-9-2009 00:40:00	0.2	0.1	0.1	0.2	0.6	351	26,820	-180,153
27-9-2009 00:49:59	0.2	0.1	0.1	0.2	0.7	405	26,820	-206,568
27-9-2009 01:00:00	0.3	0.1	0.2	0.3	0.8	441	26,820	-232,947
27-9-2009 01:10:00	0.3	0.1	0.2	0.3	0.8	463	26,820	-259,303
27-9-2009 01:19:59	0.3	0.1	0.2	0.3	0.8	477	26,820	-285,647
27-9-2009 01:30:00	0.3	0.1	0.2	0.3	0.8	485	26,820	-311,982
27-9-2009 01:40:00	0.3	0.1	0.2	0.3	0.8	489	26,820	-338,313
27-9-2009 01:49:59	0.3	0.1	0.2	0.3	0.8	492	26,820	-364,641
27-9-2009 02:00:00	0.3	0.1	0.2	0.3	0.8	495	26,820	-390,966
27-9-2009 02:10:00	0.2	0.1	0.2	0.3	0.8	484	26,820	-417,302
27-9-2009 02:19:59	0.2	0.1	0.1	0.3	0.6	428	26,820	-443,694
27-9-2009 02:30:00	0.1	0.1	0.1	0.2	0.5	330	26,820	-470,184
27-9-2009 02:40:00	0.1	0.0	0.1	0.1	0.3	225	26,820	-496,779
27-9-2009 02:49:59	0.0	0.0	0.0	0.1	0.2	141	26,820	-523,458
27-9-2009 03:00:00	0.0	0.0	0.0	0.0	0.1	85	26,820	-550,193
27-9-2009 03:10:00	0.0	0.0	0.0	0.0	0.1	52	26,820	-576,961
27-9-2009 03:19:59	0.0	0.0	0.0	0.0	0.0	31	26,820	-603,750
27-9-2009 03:30:00	0.0	0.0	0.0	0.0	0.0	19	26,820	-630,550
27-9-2009 03:40:00	0.0	0.0	0.0	0.0	0.0	12	26,820	-657,358
27-9-2009 03:49:59	0.0	0.0	0.0	0.0	0.0	7	26,820	-684,171
27-9-2009 04:00:00	0.0	0.0	0.0	0.0	0.0	4	26,820	-710,987
27-9-2009 04:10:00	0.0	0.0	0.0	0.0	0.0	2	26,820	-737,804
27-9-2009 04:19:59	0.0	0.0	0.0	0.0	0.0	1	26,820	-764,623
27-9-2009 04:30:00	0.0	0.0	0.0	0.0	0.0	1	26,820	-791,442
27-9-2009 04:40:00	0.0	0.0	0.0	0.0	0.0	1	26,820	-818,261
27-9-2009 04:49:59	0.0	0.0	0.0	0.0	0.0	0	26,820	-845,081
27-9-2009 05:00:00	0.0	0.0	0.0	0.0	0.0	0	26,820	-871,901

*Appendix 3-4*  
*Simulation Result of Flood Inundation*

(1) Result of Inundation Analysis

(Inundation Area)

(km2)

Inundation Depth (m)	Inundation Area ( 5-yr Without Project )		Inundation Area ( 5-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	2.57	3.66	1.09	2.31
0.50m - 0.99m	0.09	0.94	0.00	0.42
1.00m - 1.99m	0.00	0.10	0.00	0.06
2.00m - 2.99m	0.00	0.00	0.00	0.00
More than 3.0m	0.00	0.00	0.00	0.00
Total	2.66	4.70	1.09	2.79

(km2)

Inundation Depth (m)	Inundation Area ( 10-yr Without Project )		Inundation Area ( 10-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	3.51	4.71	2.11	3.17
0.50m - 0.99m	0.23	1.70	0.05	0.96
1.00m - 1.99m	0.00	0.14	0.00	0.10
2.00m - 2.99m	0.00	0.00	0.00	0.00
More than 3.0m	0.00	0.00	0.00	0.00
Total	3.74	6.55	2.17	4.23

(km2)

Inundation Depth (m)	Inundation Area ( 25-yr Without Project )		Inundation Area ( 25-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	3.70	5.22	3.32	4.48
0.50m - 0.99m	0.76	2.56	0.20	2.30
1.00m - 1.99m	0.01	0.31	0.00	0.20
2.00m - 2.99m	0.00	0.00	0.00	0.00
More than 3.0m	0.00	0.00	0.00	0.00
Total	4.47	8.09	3.52	6.97

(km2)

Inundation Depth (m)	Inundation Area ( 50-yr Without Project )		Inundation Area ( 50-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	3.28	4.97	3.72	5.07
0.50m - 0.99m	1.56	3.82	0.45	3.26
1.00m - 1.99m	0.01	0.50	0.00	0.34
2.00m - 2.99m	0.00	0.00	0.00	0.00
More than 3.0m	0.00	0.00	0.00	0.00
Total	4.85	9.29	4.17	8.67

(km2)

Inundation Depth (m)	Inundation Area ( 100-yr Without Project )		Inundation Area ( 100-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	2.63	4.45	3.71	5.01
0.50m - 0.99m	2.46	4.95	1.02	4.20
1.00m - 1.99m	0.03	0.66	0.01	0.55
2.00m - 2.99m	0.00	0.01	0.00	0.00
More than 3.0m	0.00	0.00	0.00	0.00
Total	5.12	10.07	4.74	9.76

(Estimated Number of House and Buildings)

Inundation Depth (m)	Number of Houses ( 5-yr Without Project )		Number of Houses ( 5-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	26,363	39,738	12,262	27,009
0.50m - 0.99m	893	13,866	20	5,787
1.00m - 1.99m	0	2,003	0	1,122
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	27,256	55,607	12,282	33,917

Inundation Depth (m)	Number of Houses ( 10-yr Without Project )		Number of Houses ( 10-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	35,998	48,432	22,730	36,634
0.50m - 0.99m	1,851	23,033	491	13,640
1.00m - 1.99m	0	2,678	0	2,003
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	37,848	74,142	23,221	52,276

Inundation Depth (m)	Number of Houses ( 25-yr Without Project )		Number of Houses ( 25-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	37,764	51,821	34,235	47,519
0.50m - 0.99m	7,474	33,000	1,563	28,954
1.00m - 1.99m	49	5,036	0	3,393
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	45,287	89,857	35,798	79,866

Inundation Depth (m)	Number of Houses ( 50-yr Without Project )		Number of Houses ( 50-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	36,455	48,660	37,498	51,132
0.50m - 0.99m	13,699	45,230	4,815	39,527
1.00m - 1.99m	49	7,388	0	5,379
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	50,203	101,278	42,313	96,037

Inundation Depth (m)	Number of Houses ( 100-yr Without Project )		Number of Houses ( 100-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	31,246	43,134	38,641	49,815
0.50m - 0.99m	22,042	55,873	10,346	48,255
1.00m - 1.99m	185	9,683	49	8,345
2.00m - 2.99m	0	202	0	0
More than 3.0m	0	0	0	0
Total	53,473	108,892	49,036	106,415



## (Estimated Population)

Inundation Depth (m)	Population ( 5-yr Without Project )		Population ( 5-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	106,672	156,148	49,614	106,385
0.50m - 0.99m	3,614	55,471	82	22,607
1.00m - 1.99m	0	8,124	0	4,552
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	110,286	219,744	49,696	133,544

Inundation Depth (m)	Population ( 10-yr Without Project )		Population ( 10-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	145,655	190,590	91,971	144,047
0.50m - 0.99m	7,488	91,935	1,988	54,010
1.00m - 1.99m	0	10,863	0	8,124
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	153,144	293,387	93,959	206,182

Inundation Depth (m)	Population ( 25-yr Without Project )		Population ( 25-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	152,804	204,173	138,522	185,891
0.50m - 0.99m	30,242	131,353	6,325	115,040
1.00m - 1.99m	197	20,343	0	13,641
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	183,243	355,869	144,846	314,572

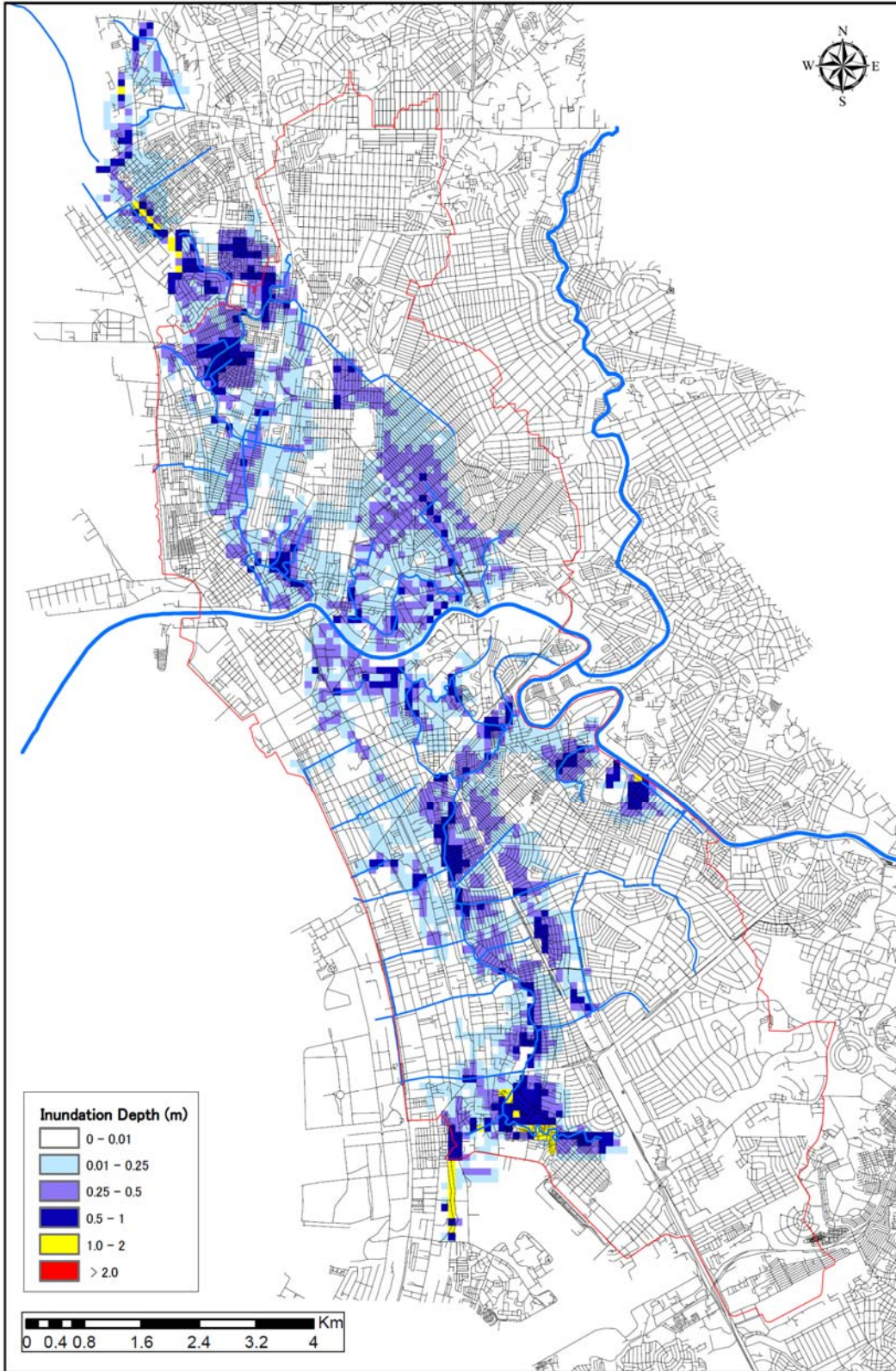
Inundation Depth (m)	Population ( 50-yr Without Project )		Population ( 50-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	147,508	192,147	151,726	200,684
0.50m - 0.99m	55,430	179,575	19,482	156,692
1.00m - 1.99m	197	29,781	0	21,637
2.00m - 2.99m	0	0	0	0
More than 3.0m	0	0	0	0
Total	203,135	401,504	171,209	379,014

Inundation Depth (m)	Population ( 100-yr Without Project )		Population ( 100-yr With Project )	
	Espana - UST	Buendia + Maricaban	Espana - UST	Buendia + Maricaban
0.15m - 0.49m	126,428	169,887	156,350	196,092
0.50m - 0.99m	89,187	221,611	41,864	190,940
1.00m - 1.99m	750	39,050	197	33,527
2.00m - 2.99m	0	820	0	0
More than 3.0m	0	0	0	0
Total	216,365	431,367	198,411	420,560

(2) Flood Inundation Map

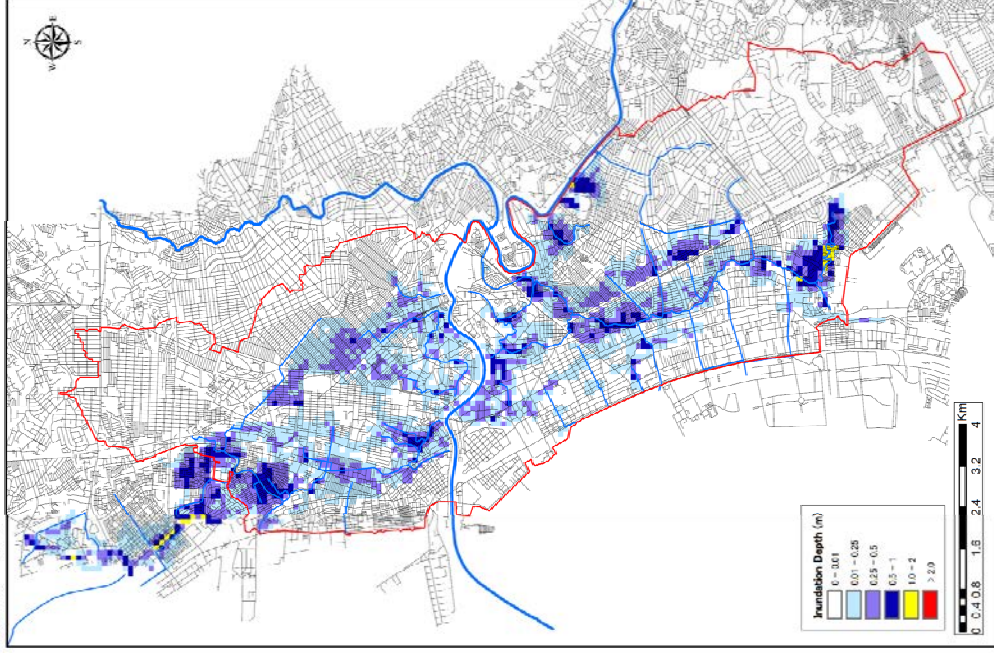
Flood Inundation Map

(Rainfall = Ondoy / River = Existing / Pump = Existing)



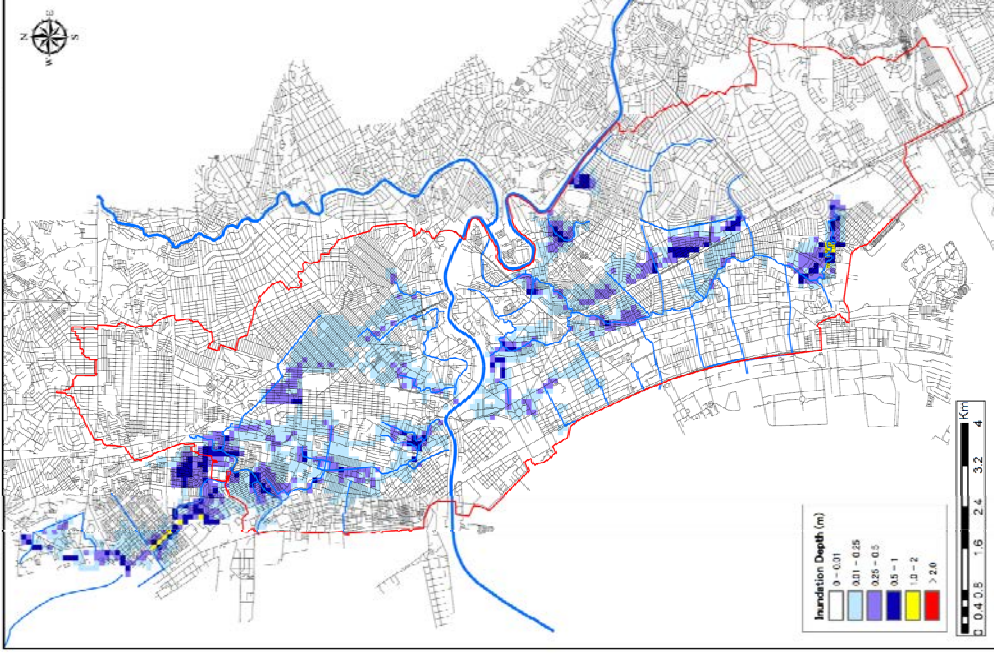
**Rainfall: Ondoy / River: Present / Pump: Existing / Without Tunnel**

Flood Inundation Map  
(Rainfall = 5yr / River = Existing / Pump = Improved)



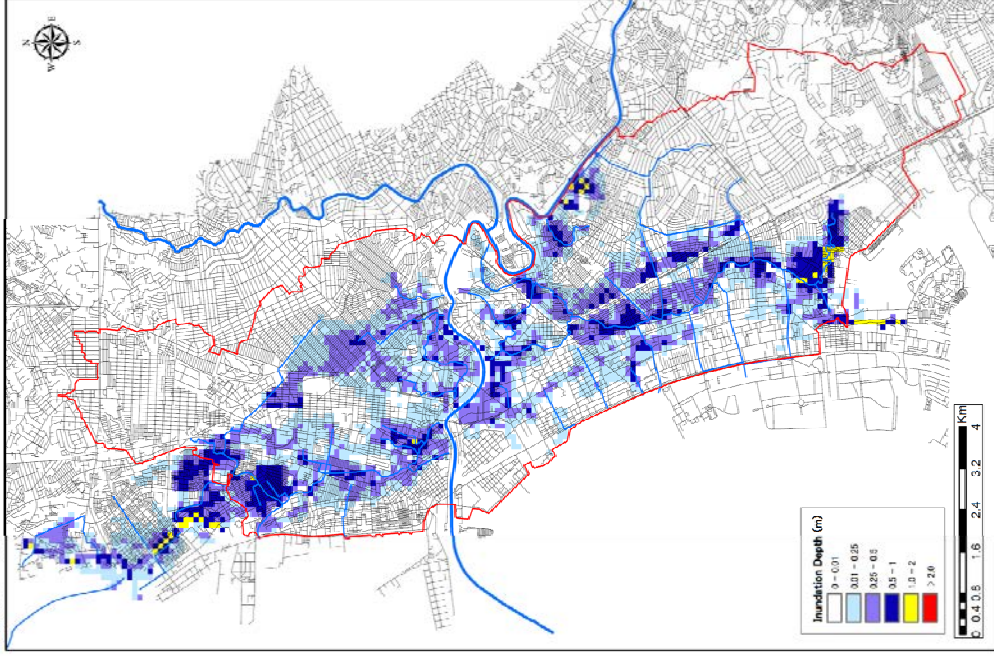
Rainfall : 5-yr / River : Rehabilitated

Flood Inundation Map  
(Rainfall = 5yr / River = Existing / Pump = Improved / with TUNNEL)



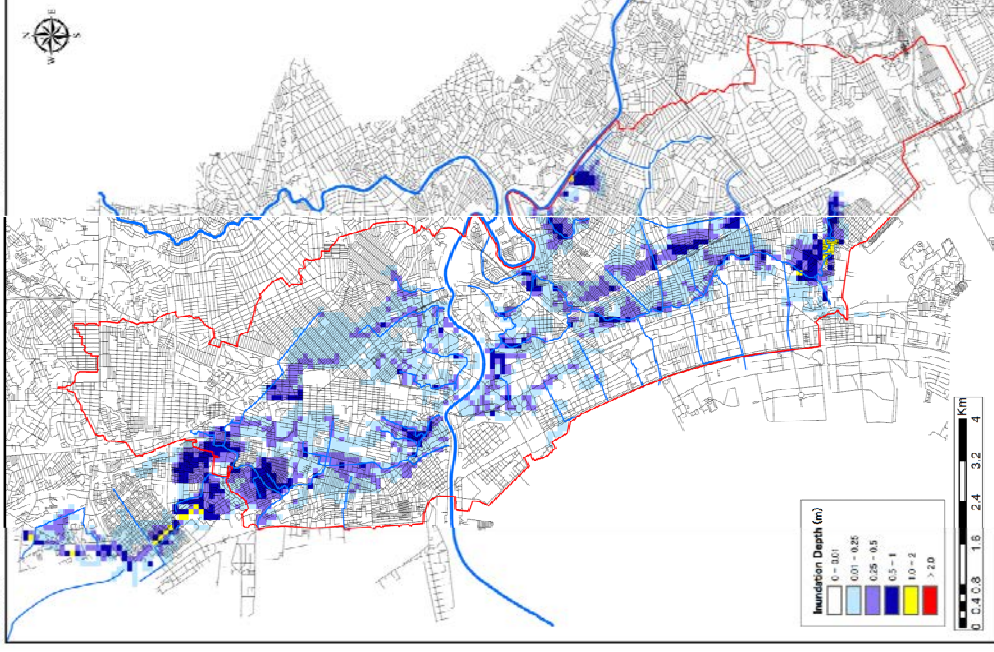
Rainfall : 5-yr / River : Present / Pump : Rehabilitated With Tunnel

Flood Inundation Map  
(Rainfall = 10yr / River = Existing / Pump = Improved)



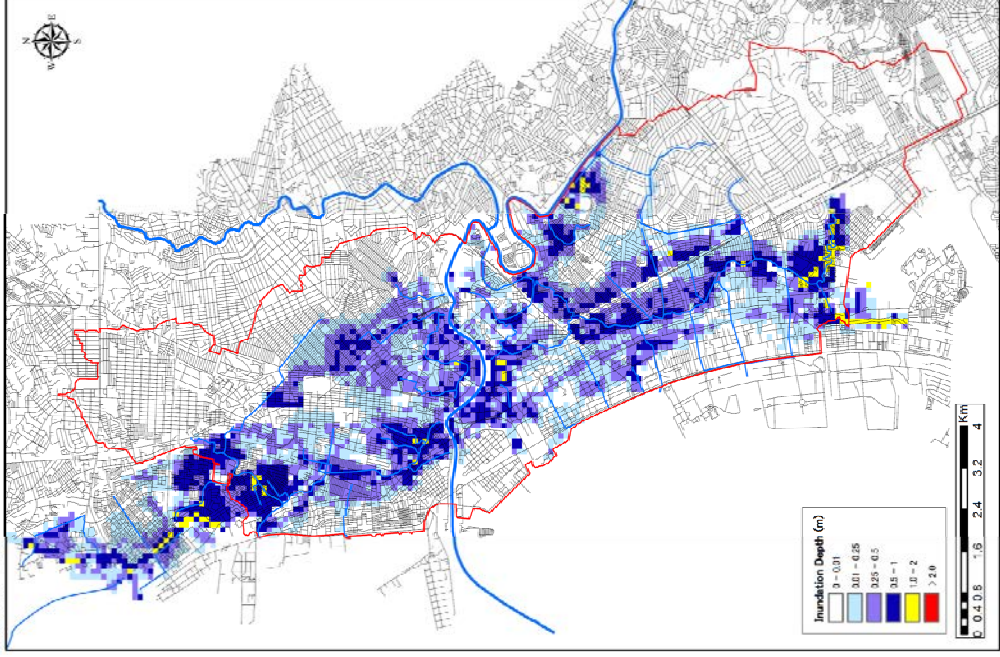
Rainfall : 10-yr / River : Present / Pump : Rehabilitated

Flood Inundation Map  
(Rainfall = 10yr / River = Existing / Pump = Improved / with TUNNEL)



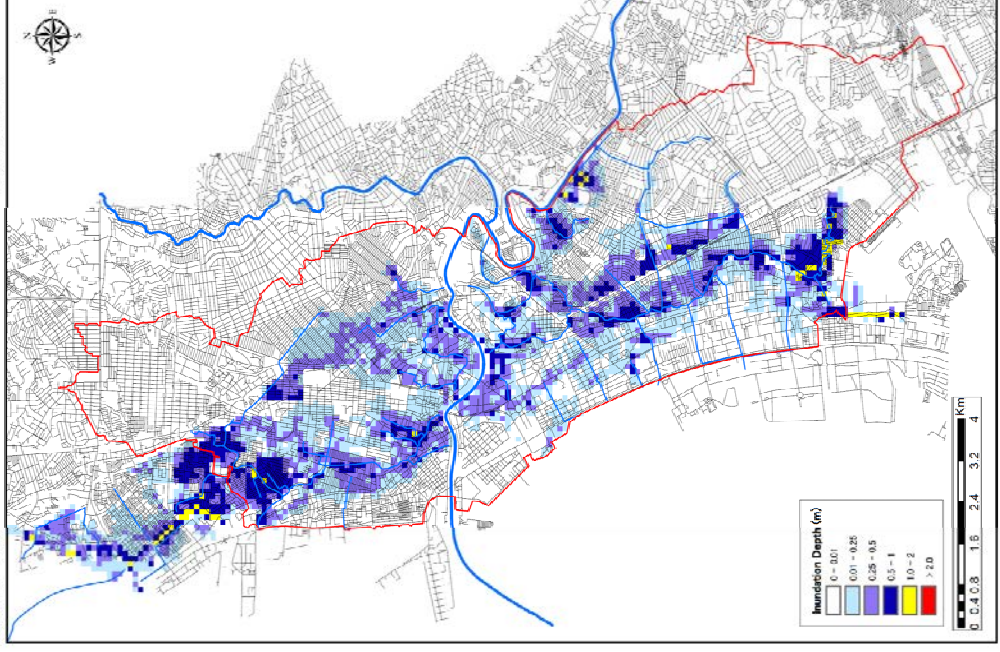
Rainfall : 10-yr / River : Present / Pump : Rehabilitated With Tunnel

Flood Inundation Map  
(Rainfall = 25yr / River = Existing / Pump = Improved)



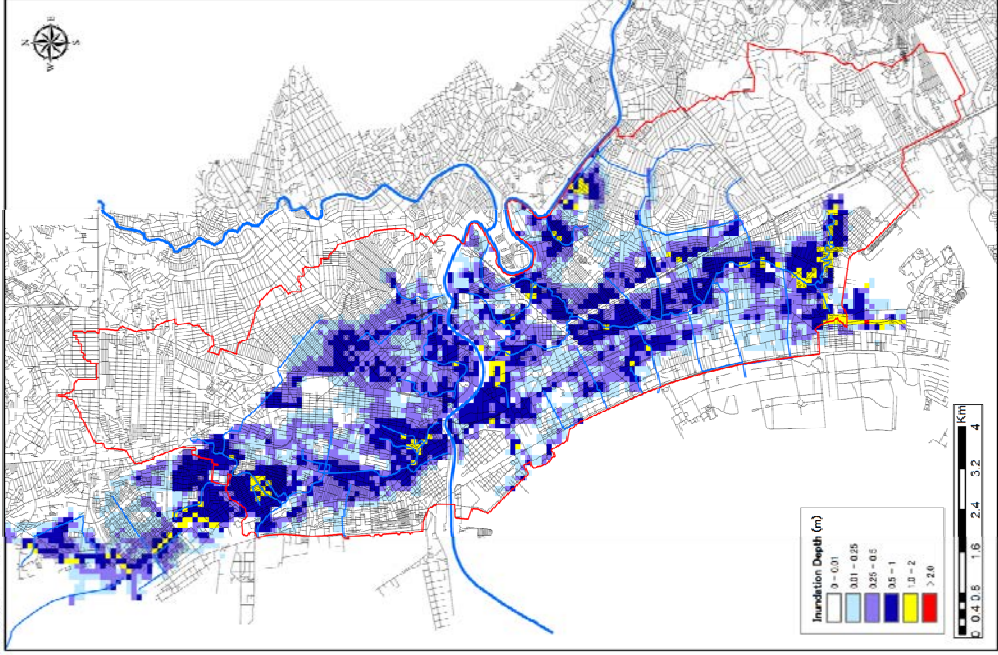
Rainfall : 25-yr / River : Present / Pump : Rehabilitated

Flood Inundation Map  
(Rainfall = 25yr / River = Existing / Pump = Improved / with TUNNEL)



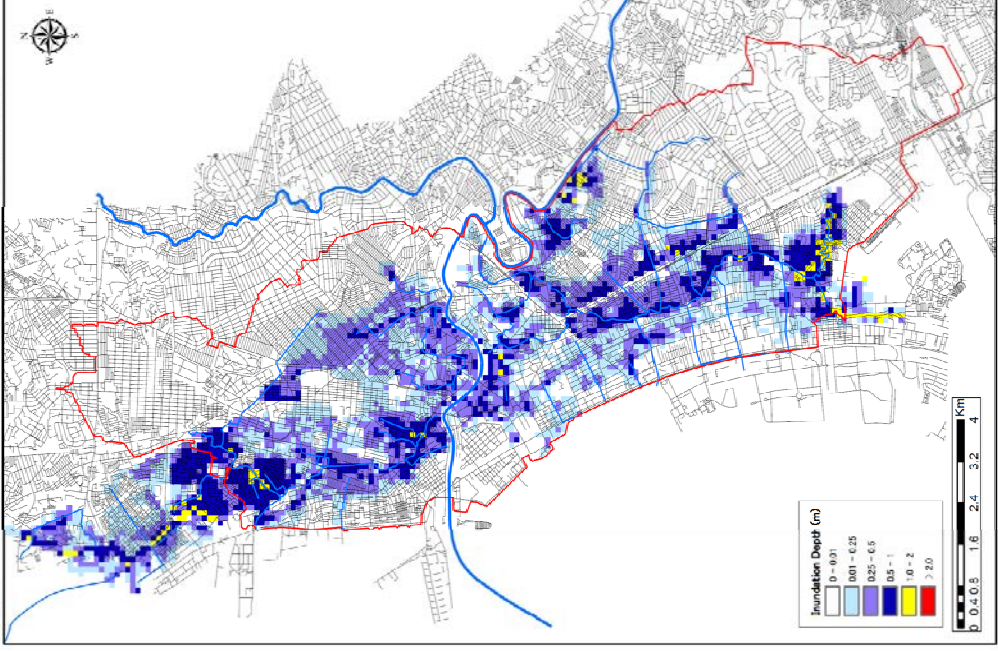
Rainfall : 25-yr / River : Present / Pump : Rehabilitated With Tunnel

Flood Inundation Map  
(Rainfall = 50yr / River = Existing / Pump = Improved)



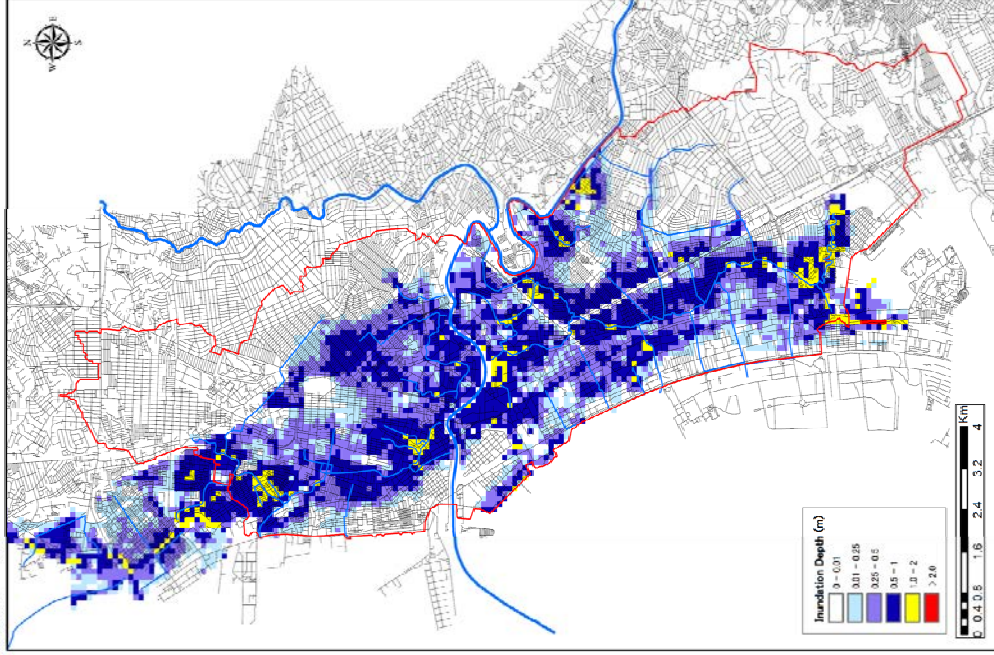
Rainfall : 50-yr / River : Present / Pump : Rehabilitated

Flood Inundation Map  
(Rainfall = 50yr / River = Existing / Pump = Improved / with TUNNEL)



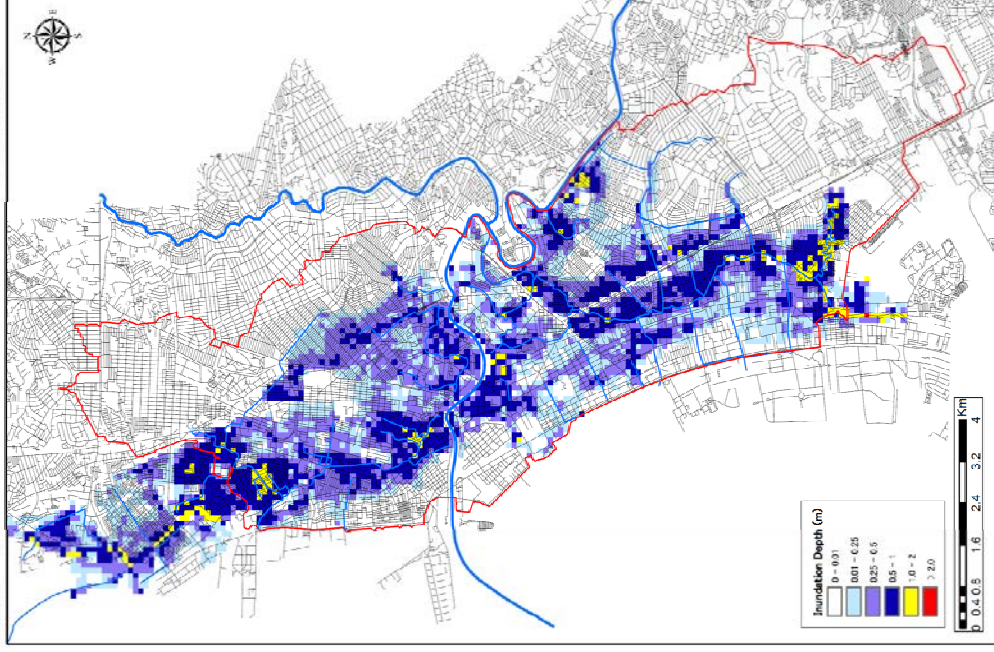
Rainfall : 50-yr / River : Present / Pump : Rehabilitated With Tunnel

Flood Inundation Map  
(Rainfall = 100yr / River = Existing / Pump = Improved)



**Rainfall : 100-yr / River : Present / Pump : Rehabilitated**

Flood Inundation Map  
(Rainfall = 100yr / River = Existing / Pump = Improved / with TUNNEL)



**Rainfall : 100-yr / River : Present / Pump : Rehabilitated With Tunnel**